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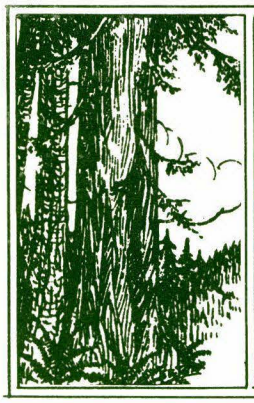
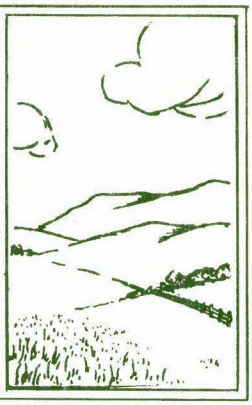


FOREST RESEARCH NOTES

U.S.DEPARTMENT OF AGRICULTURE
FOREST SERVICE
CALIFORNIA FOREST AND RANGE
EXPERIMENT STATION *

STEPHEN N. WYCKOFF, Director



No. 59 January 1949

MAKING PAPER TUBES FOR PLANT PROPAGATION

By

Emery F. Kimbrough

A growing interest is evident in the use of paper tubes for culturing ornamental plants or tree seedlings. Several advantages are claimed for this type of container. In the first place the tubes require less space, less potting soil and water, and are lighter in weight and easier to handle than the gallon cans commonly used for this purpose. Then, too, the roots are directed downward; when outplanted the lower roots are twelve inches deep rather than six inches as when plants are cultured in cans. Finally, the seedling and its container may be planted together, saving time and avoiding injury to the roots; however, some species respond better if the container is removed.

Tubes can be made from heavy building paper and then dipped in hot paraffin, from waxed stock such as that used for milk containers, or from light-weight tarred roofing paper. The latter is somewhat toxic to some plants, particularly when the tube is planted with the seedling, and for this reason has not been entirely satisfactory for general use. In any case the plants should usually be outplanted at the end of one year.

The method described here is used in making tar-paper tubes at the Institute of Forest Genetics at Placerville, California. The tubes have been used primarily for propagating cork-oak seedlings, but they have also been used for propagating pine seedlings and several species of ornamental plants. Slight modification of the method will adapt it to use with other materials than tar paper. Inquiries received regarding the method for making tubes have convinced us that this description would be welcomed by many plant propagators.

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* MAINTAINED AT BERKELEY, CALIFORNIA, IN COOPERATION WITH THE UNIVERSITY OF CALIFORNIA.

Materials and Equipment

Roofing paper in 100-foot rolls, 36 inches wide.

Dispenser for 36-inch roll paper with two knives mounted to cut the paper into three 12-inch strips as it is pulled from the roll (see fig. 1).

Table 12 feet long, 4 feet wide and 40 inches high, with 9 jigs (guides) mounted across the table at 12-inch intervals (fig. 1).

Work bench 8 feet long, 3 feet wide, and 3 feet high with 15 x 15-inch shelf to which is attached a piece of 2-inch iron pipe extending 15 inches beyond the edge of the shelf (fig. 2). A tension clamp 1-inch wide made of spring steel is attached to the shelf 1 inch from the edge (Detail "A" fig. 2).

Container for heating cement and tablespoon for spreading it.

Hot plate to keep the tar or roofing cement hot.

Paring knife or linoleum knife with short, sharp blade.

Procedure

When the listed materials are properly assembled the tubes are constructed as follows:

A roll of paper is placed in the dispenser and pulled off to the full length of the table, being ripped into three strips 12 inches wide by the mounted knives as it is pulled from the dispenser. The strips of paper are then in position on the jigs and may be cut into 12-inch squares, three at a time by drawing a knife along the jigs that cross the table.

When enough tar-paper squares have been cut the process continues as follows:

A square of paper is placed on the shelf under the spring steel clamp, the edge of the paper being aligned with the edge of the shelf (fig. 3, A). A 1-inch margin of the paper is then exposed between the edge of the shelf and the clamp. From end to end, along the center of this margin of paper a tablespoon of hot tar is poured in a line about one fourth inch wide. The opposite edge of the paper square is then brought over and placed against the outer edge of the clamp to form a cylinder, and the thumbs of both hands press the two edges together sealing the ends of the seam with the cooling tar.

The partly finished tube is then pulled from under the spring clamp and placed over the piece of 2-inch pipe, the seam up (fig. 3, B). The seam is sealed by running the fingers along it with considerable pressure. By this time the tar or cement will have cooled enough so that the finished tube may be removed from the pipe and used or stored.

A 100-foot roll of paper will make 300 tubes.

An experienced workman can make 125 tubes or more per hour.

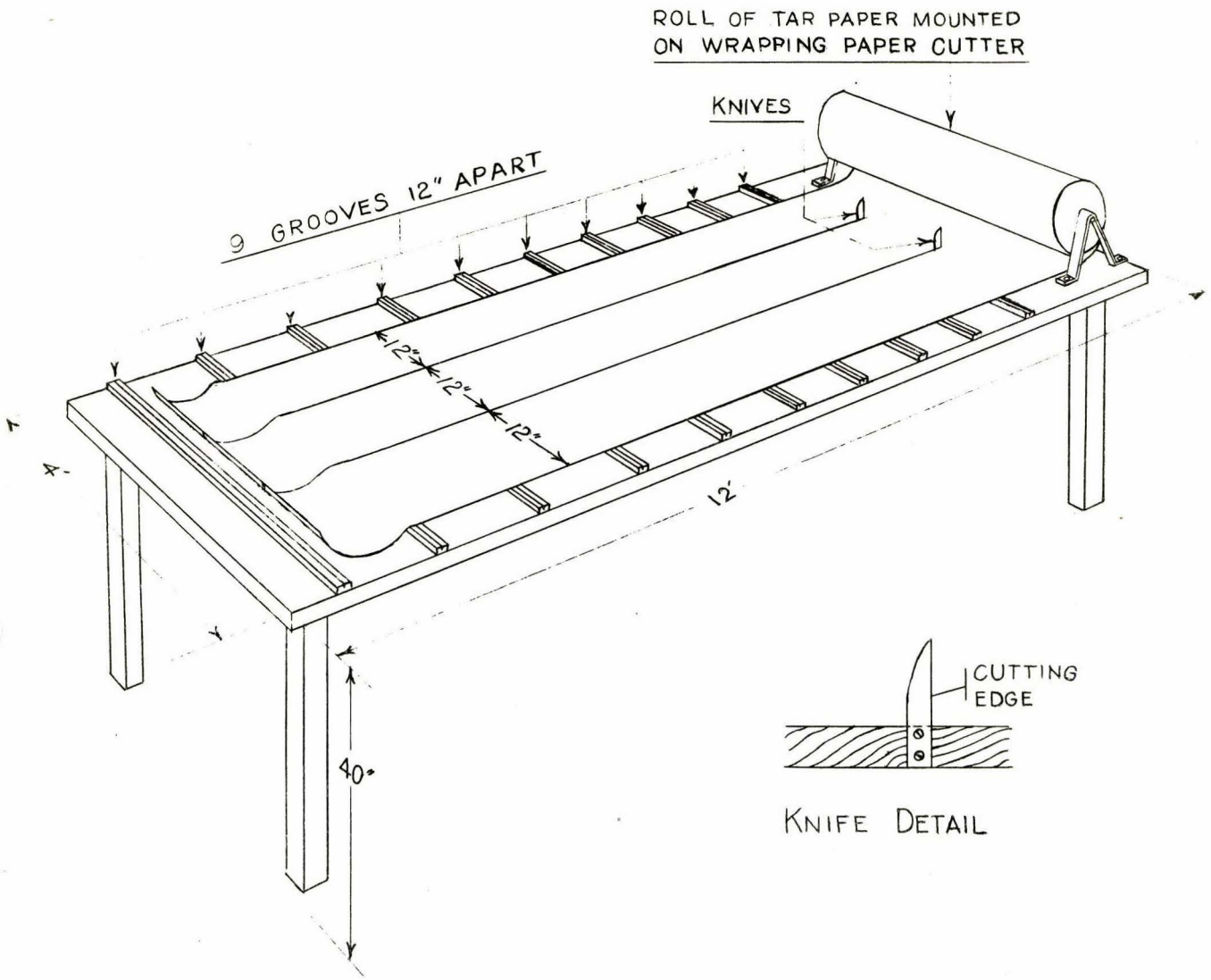
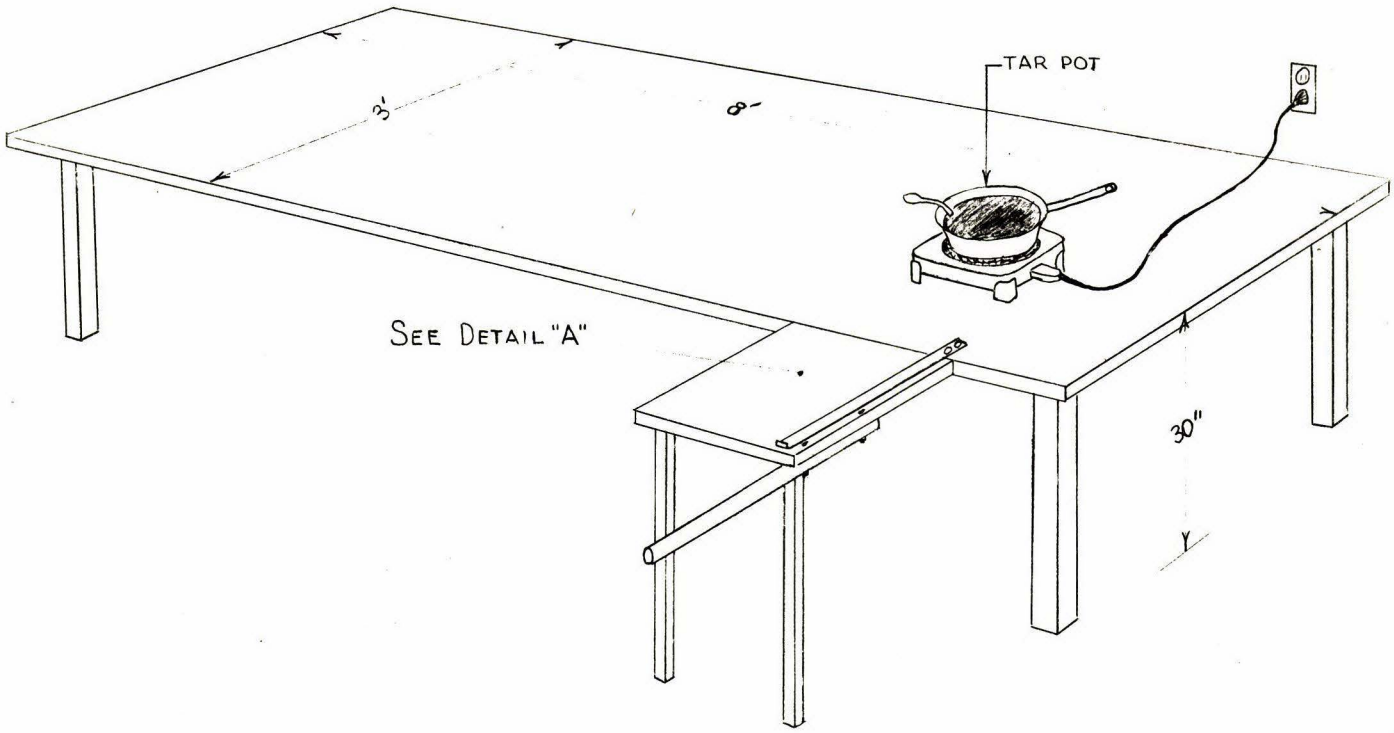

ROLL OF TAR PAPER MOUNTED
ON WRAPPING PAPER CUTTER
KNIVES
9 GROOVES 12" APART
12"
12"
12"
4'
12'
40"
CUTTING
EDGE
KNIFE DETAIL

Fig. 1


TAR POT
3'
8'
SEE DETAIL "A"
30"
Y

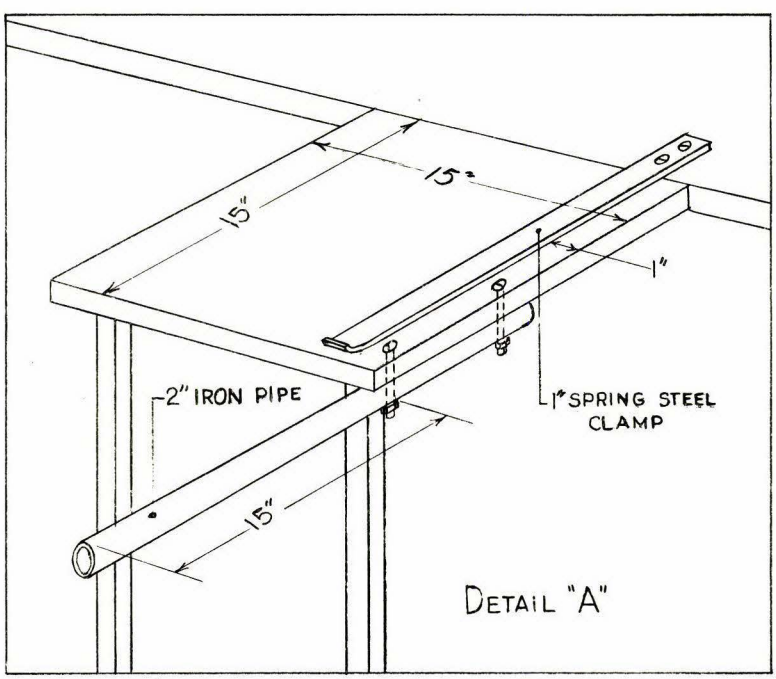
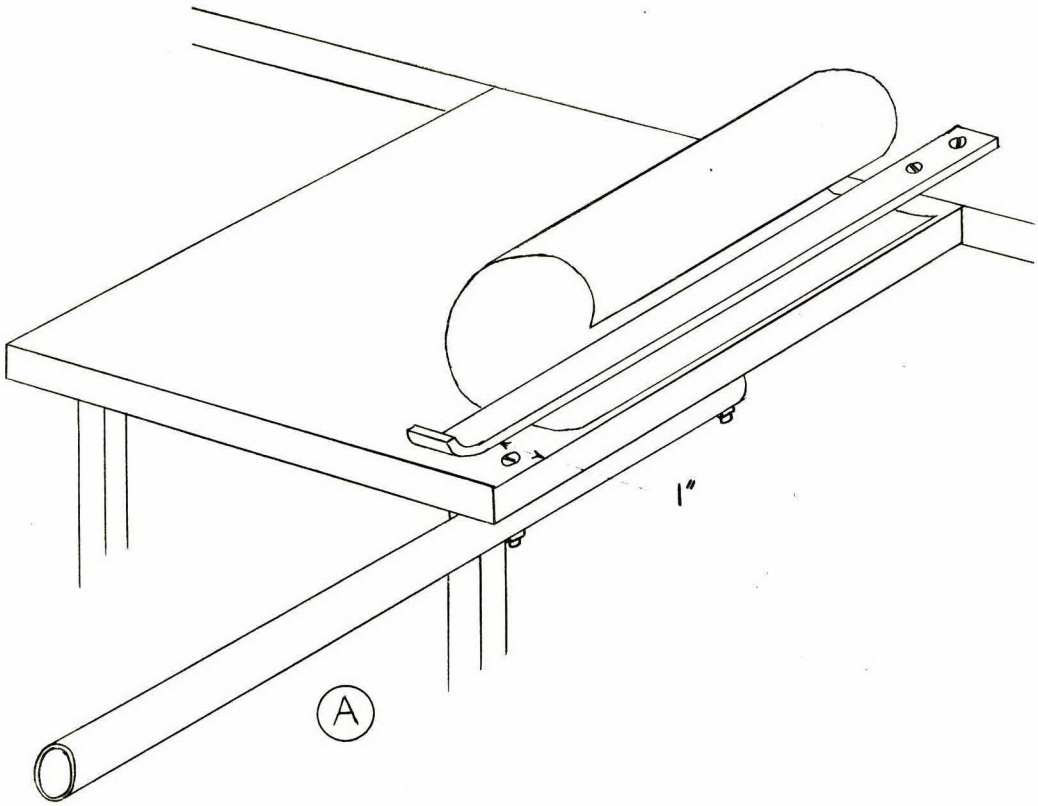
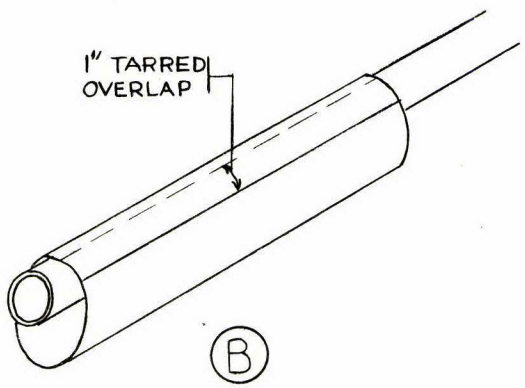
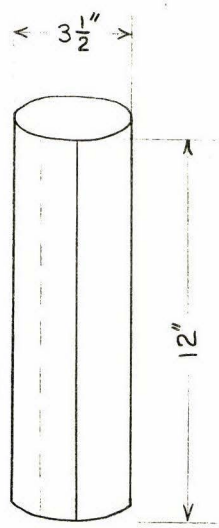

15"
15"
1"
2" IRON PIPE
1" SPRING STEEL CLAMP
15"
DETAIL "A"

Fig. 2







FINISHED TUBE

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Fig. 3